

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

COBBLESTONE WIRELESS, LLC, Plaintiff, v. T-MOBILE USA, INC. Defendant, NOKIA OF AMERICA CORPORATION, ERICSSON INC. Intervenors.	Case No. 2:22-cv-00477-JRG-RSP (Lead Case) JURY TRIAL DEMANDED
COBBLESTONE WIRELESS, LLC, Plaintiff, v. AT&T SERVICES INC.; AT&T MOBILITY LLC; AT&T CORP. Defendant, NOKIA OF AMERICA CORPORATION, ERICSSON INC. Intervenors.	Case No. 2:22-cv-00474-JRG-RSP (Member Case) JURY TRIAL DEMANDED
COBBLESTONE WIRELESS, LLC, Plaintiff, v. CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS. Defendant, NOKIA OF AMERICA CORPORATION, ERICSSON INC. Intervenors.	Case No. 2:22-cv-00478-JRG-RSP (Member Case) JURY TRIAL DEMANDED

**PLAINTIFF COBBLESTONE WIRELESS, LLC'S
OPENING CLAIM CONSTRUCTION BRIEF**

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I. INTRODUCTION

Cobblestone and Defendants¹ offer not just competing claim-construction proposals, but very different approaches to claim construction. *First*, Defendants’ results-oriented constructions of “channel estimation” and “shared resource pool” should be rejected. These are well-understood terms that needs no construction, particularly when viewed in the context of the patent specifications. *Second*, for the “adaption manager” and “quality status module” terms, Defendants cannot rebut the presumption that 35 U.S.C. § 112 ¶ 6 (or 35 U.S.C. § 112(f)) does not apply because the claims themselves indicate that these terms connote structure. In any event, even if “adaption manager” were subject to means-plus-function treatment, the term is not indefinite as Defendants claim because the specification contains sufficiently definite structure clearly linked to the recited functions. *Finally*, for the remaining two terms—“predetermined network load,” “sub-optimal resource”—Defendants claim these terms are indefinite, but these terms are readily understood in the context of the terms’ respective intrinsic records.

II. U.S. PATENT NO. 8,891,347 (“the ’347 patent”)

A. “the channel estimation [that includes the]/[including] path parameter information”

Cobblestone’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning.	The plain and ordinary meaning of the term; “the channel estimation” referenced in the disputed limitation is <u>the algorithm that is performed in the preceding step (“performing a channel estimation”).</u>

Independent claim 1 of the ’347 patent (Ex. 1)² includes three related limitations: “performing a channel estimation ... to obtain path parameter information,” “send[ing] *the channel*

¹ For simplicity, Defendants and Intervenor are collectively referred to as “Defendants.”

² Citation to exhibits are to the exhibits of the concurrently filed Conkle declaration.

estimation that includes the path parameter information to the transmitter,” and “predistorting a second signal at the transmitter ... according to *the channel estimation*.”³ The other independent claims 8, 15, and 19 include some or all of these limitations, with minor variations.⁴

Defendants argue that the “sending” limitation must be construed as, in effect, “sending *the algorithm performed in the preceding step* to the transmitter,” and the “predistorting” limitation as “predistorting a second signal at the transmitter ... according to *the algorithm performed in the preceding step*.” Defendants’ construction contradicts the plain meaning in light of the specification and the claim context; it also contradicts Defendants’ own invalidity theory and its expert’s sworn declaration. It is further premised on incorrect law and should be rejected.

A POSITA would readily understand “the ‘sending’ limitation does not require sending an *algorithm*, but rather sending *the channel estimation* itself.” Cooklev Decl.⁵ ¶ 26 (emphases in original). This understanding reflects a POSITA’s reading of the specification. Figure 4 includes steps 410 “Performing a *channel estimation* of the first signal to obtain path parameter information of the propagation path,” 440 “Sending *the channel estimation* from the receiver to the transmitter via the propagation path,” and 450 “Pre-distorting a second signal at the transmitter according to *the channel estimation*.” ’347 patent at Fig. 4. These steps plainly parallel the claim language, and the corresponding description of each step readily confirms that the “sending” step comprises sending information *obtained* in step 410, not sending step 410 *itself* in the form of an “algorithm.”

In particular, the exemplary description of step 440 states that “the receiver 150 feedbacks these path parameter information,” *i.e.*, the channel estimation information from step 410—not the

³ All emphasis added unless otherwise noted.

⁴ Claim 15 omits “performing a channel estimation” and claims “receiving a channel estimation” rather than “sending the channel estimation”; claim 19 omits “predistorting.”

⁵ Citation to “Cooklev Decl.” are citations to the concurrently filed expert declaration of Dr. Todor Cooklev in support of Cobblestone’s claim construction positions.

step 410 algorithm itself—“to the transmitter 110 via the propagation path.” *Id.* at 9:1-5. Then, in step 450, the transmitter may use “parameters” and “information” received by the transmitter—not an algorithm or process received by the transmitter—to pre-distort a second signal. *Id.* at 9:6-12 (“[T]he transmitter ‘pre-distorts’ a second signal ... with appropriate settings These settings are determined by the parameters of paths fed-back from the receiver at 440.”); *see also id.* at 9:29-31 (“[A] M×N replica of the transmitted signal is created at step 450 using the path parameter information sent to the transmitter 110 at 450 [sic; ‘440’ probably intended].”). There is no reference, under any reading, to sending, in step 440, the *algorithm* of step 410.

The claims parallel the non-limiting example provided in the specification: the receiver performs a process to estimate channel information based on a first signal and sends the resulting information to the transmitter; the transmitter receives the information and uses it to predistort a second signal. Dr. Cooklev’s un rebutted testimony confirms this. As he explains, “a POSITA would understand that ‘performing a channel estimation’ ... is done to obtain ‘the channel estimation’ that is sent,” and that “‘send[ing]/receiving the channel estimation’ means sending/receiving the channel estimation that was obtained by ‘performing a channel estimation.’” Cooklev Decl. ¶¶ 29-30. He further notes, consistent with the specification, that “the path parameter information” that is included in the channel estimation is “information obtained through measurements and/or calculations, and is not part of an algorithm,” which confirms that “it is information, not an algorithm” that is sent/received. *Id.* ¶ 30.

Defendants’ expert, however, takes a misguided legalistic reading of the relationship between “a channel estimation” and “the channel estimation,” which compels him to support Defendants’ proposal. Proctor Decl. (Ex. 4) ¶¶ 25-26. Defendants’ lawyers apparently erroneously informed him that “when a claim uses the word ‘the’ as the antecedent basis, it is referring back to

the previous use of the same term,” *i.e.* that the “channel estimation” performed in one step must refer to literally the same thing as “the channel estimation” sent, received, or used in other steps. *Id.* ¶ 25.⁶ Furthermore, Mr. Proctor states that he understands that “the claim language’s use of ‘the’ requires that no other interpretation (such as ‘the result of the channel estimation’) can be used.” *Id.* Applying that incorrect understanding of the law, Mr. Proctor briefly avers that a POSITA would understand one reason for sending the channel estimation algorithm, instead of the channel estimation information itself: to “allow the base station to better understand how the path parameter information was calculated.” *Id.* ¶ 26.

This is nonsensical and defies common sense. Even if knowing the transmitter’s algorithm might help the base station “better understand” the channel estimation information—a notion suggested nowhere else in the intrinsic or extrinsic record—such knowledge or understanding is plainly useless without *the channel estimation information itself*. If you asked me for an estimation of the distance between my office and the photocopier, would you expect me to respond: “I counted my steps?” No; that would be both ridiculous and useless.

And the assumption that an antecedent relationship between two terms absolutely requires a uniform meaning is just incorrect. The Federal Circuit has expressly held that “the patentee’s mere use of a term with an antecedent does **not** require that both terms have the same meaning.” *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008). Indeed, when one word is used in two plainly different senses, the resulting “nonsensical reading under a uniform construction” supports “determining the appropriate meaning of each use of the term from its context” rather than imposing a single meaning across the entire claim. *Id.* at

⁶ This rationale, and indeed Defendants’ construction, ignores claim 15, which lacks any step of “performing a channel estimation”; there is no “algorithm that is performed in the previous step.”

1376. In *Microprocessor Enhancement*, the claims contained several references to “[a/the] condition code,” referring to “either a storage unit or a value derived from the output of the storage unit depending on the context in which it is used.” *Id.* at 1375. The district court held that the word “the” meant that the “term *must* be interpreted consistently across all such uses in a single claim.” *Id.* (emphasis in original). The Federal Circuit reversed, instead looking to the claim context, the specification, and expert testimony to determine that “condition code” was not “surrounded by uniform language that requires a single interpretation,” and rather that its “appropriate meaning ... is readily apparent from each occurrence in context.” *Id.* at 1376. Because Defendants’ supposed “no other interpretation ... can be used” rule would have directly precluded the Federal Circuit’s conclusion, it is necessarily wrong. Mr. Proctor’s testimony applying that erroneous rule should be disregarded.

Rather, *Microprocessor Enhancement* dictates the result here. As in that case, the intrinsic record and the testimony of Plaintiff’s expert show the two subtly different meanings of “channel estimation” in two different contexts, referring to a process in one place and the result of that same process in another. Other than unreliable testimony by an expert who applied a legal principle that has been explicitly rejected by the Federal Circuit, there is no evidence even arguably supporting Defendants’ “sending the algorithm” interpretation. And there is nothing unusual about the claims’ use of “estimation” to refer to the result of an estimation process; it reflects ordinary English usage—even judicial usage. *See, e.g., Colony Nat’l Ins. Co. v. United Fire & Cas. Co.*, No. 5:14-cv-10-JRG-CMC, 2016 WL 3896832, at *1 (E.D. Tex. Apr. 14, 2016) (“United has not objected to the \$7,500.00 *estimation*.”); *Golden Hour Data Sys., Inc. v. emsCharts, Inc.*, No. 2:06-cv-381-JRG, 2014 WL 8708239, at *18 (E.D. Tex. Mar. 31, 2014) (five years “is a reasonable *estimation* of the duration of emsCharts’ pre-verdict infringement.”).

Indeed, in their IPR challenge to the '347 Patent, Defendants and Mr. Proctor interpret the “sending” limitation as sending *information*, not an algorithm. *See* Ex. 7 at 37 (“[T]hese disclosures show how channel estimation *information* is sent from the receiver to the transmitter...”); Ex. 8 ¶ 142 (similar statement); *see generally* Ex. 7 at 36-38, Ex. 8 ¶¶ 138-145.

Because the claim context, the patent specification, and the understanding of a POSITA all indicate that “the channel estimation ...” should have its plain and ordinary meaning, and because the “algorithm of the previous step” interpretation is facially nonsensical and contrary to binding Federal Circuit authority, Defendants’ proposed construction should be rejected.

III. U.S. PATENT NO. 9,094,888 (“the ’888 patent”)

A. Summary of the ’888 Patent

At a high level, the ’888 patent is generally directed to certain methods and systems for handing off a wireless device from one wireless network to another. ’888 patent (Ex. 2) at 1:38-2:26. As the specification explains, “beamforming or beam shaping may cause handoff challenges for a wireless device to possibly be handed off to the wireless network.” *Id.* at 3:36-39. This is because “constantly changing sectors of coverage may result in a wireless device being able to detect a wireless network at a location at a given period of time. However, as sectors of coverage change, the wireless device may no longer detect the wireless network at the same location at another given period of time.” *Id.* at 3:31-36. The claimed inventions aim to address this challenge by having handoff requests be based, at least in part, on “a determination by the second wireless network that the wireless device is not currently covered by the first wireless network” and/or “a determination by the second wireless network that the wireless device is capable of being covered by the first wireless network.” *See, e.g., id.* at 1:52-57, 2:14-19; *id.* at claims 9 and 20. In some embodiments, the claimed inventions may also take into account the impact of “what network load

would be placed on [a] wireless network” if a wireless device is handed off to that wireless network from a different one. *See, e.g., id.* at 6:60-66, claim 12.

Both the specification and system claim 20 describe an “adaption manager” that can be used to accomplish the goals of the claimed invention. It is the “adaption manager” of the claimed system that “receive[s] a handoff request,” “cause[s] a beam ... to be adapted” by “an antenna array,” and “transmit[s] a confirmation ... to indicate acceptance of the handoff request.” *Id.* at claim 20; *see also, e.g., id.* at 8:65-10:13, Fig. 3.

B. “adaption manager”

Cobblestone’s Proposed Construction	Defendants’ Proposed Construction
<p>No construction necessary; plain and ordinary meaning; not subject to means-plus-function treatment under 35 U.S.C. § 112(6).</p> <p>If counterfactually § 112(6) were to apply, not indefinite.</p> <p>Functions: receive a handoff request from the second wireless network, the handoff request based, at least in part, on a determination by the second wireless network that the wireless device is capable of being covered by the first wireless network; cause a beam from among the one or more adaptable beams to be adapted in order to enable the wireless device to be covered by the first wireless network; transmit a confirmation to the second wireless network to indicate acceptance of the handoff request, wherein the wireless device is handed off from the second wireless network to the first wireless network.</p> <p>Structure: adaption manager 122 (FIGs. 1A-1C, 3, 5-7, 4:4-6, 5:18-20, 6:18-7:23, 8:65-10:13, 12:23-13:28, 13:62-15:45, and/or corresponding figures and equivalents).</p>	<p>Indefinite under § 112, ¶ 6.</p>

The phrase “adaption manager” appears in claim 20 of the ’888 patent. As discussed below, this term does not invoke § 112 ¶ 6. Cooklev Decl. ¶¶ 36-46. Alternatively, if the Court does construe this phrase as subject to § 112 ¶ 6, the term is not indefinite because the structure that is clearly linked to the purported functions is set forth in the specification such that a POSITA would understand that structure with reasonable certainty. Cooklev Decl. ¶¶ 47-51.

i. Pre-AIA 35 USC. § 112 ¶ 6⁷ is not applicable to claim 20.

“The failure to use the word ‘means’ creates a rebuttable presumption that § 112 ¶ 6 does not apply.” *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1007 (Fed. Cir. 2018). This presumption cannot be overcome unless “the challenger *demonstrates* that the claim term fails to recite sufficiently definite structure or else recites function without reciting structure for performing that function.” *Id.* (emphasis in original) (quoting *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015)). “From a procedural standpoint, this presumption imposes on [Defendants] a burden of going forward with evidence to rebut ... the presumption.” *Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1367 (Fed. Cir. 2022) (quoting *Apex, Inc. v. Raritan Comp., Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003)).

Thus, to invoke the application of § 112 ¶ 6, Defendants bear the burden of showing that “adaption manager” fails to “recite sufficiently definite structure” and recites “function without reciting sufficient structure for performing that function,” in light of the intrinsic record and extrinsic evidence presented. *See Zeroclick*, 891 F.3d at 1007. Defendants cannot meet this burden.

First, “adaption manager,” in the full context of claim 20, conveys structure to a POSITA. It is black letter law that “the claims themselves provide substantial guidance as to the meaning of particular claim terms.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc). Accordingly, “the context in which a term is used in the asserted claim can be highly instructive.” *Id.* “Even if a patentee elects to use a generic claim term, such as a nonce word or a verbal construct, properly construing that term (in view of the specification, prosecution history, etc.) may still provide sufficient structure such that the presumption against means-plus-function claiming remains intact.” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1299 (Fed. Cir. 2014)

⁷ Pre-AIA Section 112 ¶ 6 applies here because the priority date of the ’888 patent pre-dates enactment of the America Invents Act.

(internal quotation marks omitted).

Here, the claim language itself makes clear that the term “adaption manager” conveys structure. Claim 20 of the ’888 patent reads as follows:

[20.pre] A system for a wireless device handoff between a first wireless network and a second wireless network, the system comprising:

[20.a] an ***antenna array configured to generate one or more adaptable beams*** to modify a coverage area for the first wireless network; and

[20.b] an ***adaption manager having logic, the logic configured to:***

[20.c] ***receive a handoff request*** from the second wireless network, the handoff request based, at least in part, on a determination by the second wireless network that the wireless device is capable of being covered by the first wireless network,

[20.d] ***cause a beam*** from among the one or more adaptable beams ***to be adapted*** in order to enable the wireless device to be covered by the first wireless network, and

[20.e] ***transmit a confirmation*** to the second wireless network ***to indicate acceptance of the handoff request***, wherein the wireless device is handed off from the second wireless network to the first wireless network.

’888 patent at claim 20 (numbering added). The claim language itself provides structure because it describes the inputs, outputs, and structural connections of the adaption manager. As an example of an input to the adaption manager, claim 20 states that the “adaption manager ... receive[s] a handoff request.” As an example of an output of the adaption manager, claim 20 also states that the “adaption manager ... transmit[s] a confirmation ... to indicate acceptance of the handoff request.” *See* Cooklev Decl. ¶ 45.

As an example of a structural connection, the claim language also makes clear that the “adaption manager” is operatively coupled to the “antenna array” and provides outputs to it. More specifically, claim 20 recites a “system comprising (1) an *antenna array configured to generate one or more adaptable beams* to modify a coverage area for the first wireless network; and (2) an *adaption manager having logic configured to ... cause a beam ... to be adapted* in order to enable

the wireless device to be covered by the first wireless network.” ’888 patent at claim 20 (numbering added). First, a POSITA would understand that an “antenna array” is a well-known physical structure in wireless communications. Cooklev Decl. ¶ 43; *see also* ’888 patent at Figs. 1A-1C (depicting antenna arrays as physical components). And upon reading claim 20, a POSITA would understand that the “antenna array” and the “adaption manager” must be operatively coupled for the adaption manager to “cause a beam” generated by the antenna array “to be adapted.” Cooklev Decl. ¶ 43. This understanding is confirmed by the specification. *See, e.g.*, ’888 patent at 6:26-30 (“[A]daption manager 122 of wireless network 120 may include logic and/or features configured to ... determine whether to adapt antenna array 124 to facilitate coverage of wireless device 130A.”); *see also id.* at 4:1-12, 6:50-54, 6:60-62, 12:64-13:8, Figs. 3, 5; Cooklev Decl. ¶ 44.

This is precisely the type of contextual structure courts apply in rejecting application of § 112 ¶ 6. For example, in *Apple*, the Federal Circuit reversed the district court’s application of § 112 ¶ 6 to the claim term “heuristic.” 757 F.3d at 1296-304. In particular, the panel noted:

We need not decide here whether the term ‘heuristic,’ by itself, connotes sufficient structure to maintain the presumption against means-plus-function claiming because, in this case, the claims do not nakedly recite heuristics without further description in the remaining claim language and specification. To the contrary, the claim language and specification disclose the heuristics’ operation within the context of the invention, including the inputs, outputs, and how certain outputs are achieved.

Id. at 1301. In that case, the claims recited varying objectives for “heuristics,” including “vertical screen scrolling” and “two-dimensional screen translation,” and also explained how the invention differentiated between those objectives. *Id.* And the specification provided more details on the heuristics’ inputs and outputs. *Id.* at 1301-02. Here, as in *Apple*, the claims themselves inform the structural character of the “adaption manager.”

Courts in this district have reached the same conclusion: “By reciting the objectives of the [disputed term], and how [that disputed term] operates within the context of the claimed invention,

the claim language connotes sufficiently definite structure to one of skill in the art.” *Estech Sys. IP, LLC v. Mitel Networks, Inc.*, No. 2:21-cv-473-JRG-RSP, 2023 WL 2695093, at *14 (E.D. Tex. Mar. 28, 2023); *see also Free Stream Media Corp. v. Alphonso Inc.*, No. 2:15-cv-1725-RWS, 2017 WL 1165578, at *19-20, 25-26, 28 (E.D. Tex. Mar. 29, 2017), *aff’d*, 996 F.3d 1355 (Fed. Cir. 2021); *Uniloc USA, Inc. v. Autodesk, Inc.*, No. 2:15-cv-1187-JRG-RSP, 2016 WL 3647977, at *19-20 (E.D. Tex. July 7, 2016).

Courts in this district have also specifically held that where, as here, the claim language describes the *inputs and/or outputs* of the disputed claim term, that term is structural and thus not a means-plus-function term. *See, e.g., Netlist, Inc. v. Samsung Elecs. Co.*, 2:22-cv-00293-JRG, 2023 WL 8101855, at *12 (E.D. Tex. Nov. 21, 2023) (finding “logic” to be a structural limitation in part because the claim required “the receipt of address and control signals” and “the output of chip-select signals based on the input signals”); *Intelligent Water Solutions, LLC v. Kohler Co.*, No. 16-cv-689-JRG-RSP, 2017 WL 2444723, at *13-14 (E.D. Tex. June 5, 2017) (holding that “[t]he claims themselves connote sufficiently definite structure by describing how the ‘remote system monitoring/control device’ operates within the claimed invention to achieve its objectives,” in part because “[c]laim 1 ... recites that it ‘operates to receive signals from said system control means and/or said one or more system sensor(s)’”).

And where, as here, the claim language makes clear that the disputed term is *structurally connected or operatively coupled* to a physical structure, courts in this district have held that the disputed term is structural and thus not subject to § 112 ¶ 6 treatment. *See, e.g., Free Stream*, 2017 WL 1165578, at *28 (“[T]he claim itself connotes that the term ‘processor configured to’ is structural by describing ... how it is ‘communicatively coupled’ coupled to a memory.”); *Netlist*, 2023 WL 8101855, at *12 (“As used in these claims, ... ‘logic’ clearly connotes *physical* structure

rather than software, as the claims required the ‘logic’ to be coupled to either a printed circuit board ... or a buffer.”) (emphasis in original); *OnPoint Sys., LLC v. Protect Animals with Satellites, LLC*, 4:20-cv-0657-ALM, 2022 WL 1612070, at *22-23 (E.D. Tex. May 20, 2022) (holding § 112 ¶ 6 did not apply to “positioning unit” in part because the claim “recites that the processor unit is in communication with the positioning unit and the memory”).

Moreover, the claim language indicates that the “adaption manager ha[s] logic,” and that “logic [is] configured to” have various functionality. ’888 patent at claim 20. To a POSITA in this field, the term “logic” refers to digital circuitry, such as an off-the-shelf digital signal processor, which can be configured to implement the specific logic of the adaption manager. Cooklev Decl. ¶ 40. This specification confirms this understanding is applicable to these claims here. *Id.* ¶ 41. “The example adaption manager 122 of FIG. 3 includes *adapt logic 310, control logic 320*,” both of which “may separately or collectively represent a wide variety of *logic device(s)* to implement the features of adaption manager 122. An example logic device may include one or more of *a computer, a microprocessor, a microcontroller, a field programmable gate array (FPGA), an application specific integrated circuit (ASIC), a sequestered thread or a core of a multi-core/multi-threaded microprocessor or a combination thereof*.” ’888 patent at 9:6-9, 9:20-28. This Court has held very similar disclosures convey structure to a POSITA. *See Netlist*, 2023 WL 8101855, at *12 (holding that “logic” was a structural term in part because the specification disclosed “PLDs, ASICs, FPGAs, and CPLDs as ‘logic elements’”); *see also Free Stream*, 2017 WL 1165578, at *28; *cf. CA, Inc. v. Netflix, Inc.*, 2:21-cv-00080-JRG-RSP, 2021 WL 5323413, at *21 (E.D. Tex. Nov. 16, 2021) (“Courts in this district, as well as other districts, have concluded that in many instances ... ‘logic,’ may connote sufficiently definite structure, and is not a ‘nonce’ or ‘functional’ word”).

Thus, from the context of the claim, and as further supported by the specification, a POSITA would thus understand that at least part of⁸ the “adaption manager” is one or more physical computing devices; thus, “adaption manager” is a structural, rather than a purely functional, term. *See, e.g., Samsung Elecs. Am., Inc. v. Prisia Eng’g Corp.*, 948 F.3d 1342, 1354 (Fed. Cir. 2020) (“As used in the claims ..., the term ‘digital processing unit’ clearly serves as a stand-in for a ‘general purpose computer’ or a ‘central processing unit,’ each of which would be understood as a reference to structure in this case, not simply any device that can perform a particular function.”); *Pantech Corp. v. OnePlus Tech. (Shenzhen) Co.*, No. 5:22-cv-00069-RWS-JBB, 2023 WL 5003574, at *27 (E.D. Tex. Aug. 4, 2023) (“While ‘unit’ may be a nonce term in some contexts, both the claims and specification provide sufficient context such that a skilled artisan would recognize the ‘control unit’ in the claim as a processor.”); *see also CA*, 2021 WL 5323413, at *28 (citing *Samsung*, 948 F.3d at 1354).

Other portions of the specification confirm that the “adaption manager” of claim 20 is structural. For example, “[a]s illustrated in FIG. 3, adapt logic 310 is coupled to control logic 320, memory 330 and I/O interfaces 340.” ’888 patent at 9:9-10; *see also id.* at Fig. 3. As explained above, a POSITA would understand the adaption manager’s “control logic” and “adapt logic” to be structural. Cooklev Decl. ¶ 46. And a POSITA would similarly understand that “memory” and “I/O interfaces” are physical components of computing devices. *Id.*; *see also* ’888 patent at 9:54-10:7. A POSITA would also understand that it is these I/O interfaces that the adaption manager uses to receive its inputs and send its outputs, including those discussed above, further confirming that the adaption manager is a structural limitation. Cooklev Decl. ¶ 46. Depiction of the adaption

⁸ As discussed below, the adaption manager also has other structural components, including memory and I/O interfaces.

manager and its logic “alongside and in the same format as these other structural terms highlights that the patent is using the terms to connote a known structure rather than as a nonce substitute for the word ‘means.’” *Estech*, 2023 WL 2695093, at *14; *CA*, 2021 WL 5323413, at *22 (same); *OnPoint*, 2022 WL 1612070, at *23 (same).

In short, Defendants cannot rebut the presumption that § 112 ¶ 6 does not apply to this term because the claims themselves connote structure to a POSITA.

ii. To the extent § 112 ¶ 6 applies to claim 20, the corresponding structure is adaption manager 122 and equivalents.

When no structural support for a claimed function is recited, the “claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” 35 U.S.C. § 112 ¶ 6. Thus, in the event that § 112 ¶ 6 is found to apply, the next step is to identify the corresponding structure described in the specification.

The ’888 patent makes this step particularly straightforward, because the specification is explicit that the structure corresponding to the recited functions is adaption manager 122 (and equivalents of it). The specification “clearly links or associates” adaption manager 122 to each of the specified functions of the claimed “adaption manager.” *See Williamson*, 792 F.3d at 1352. For example, the specification recites that “adaption manager 122 of wireless network 120 may include logic and/or features configured to *receive the handoff request and determine whether to adapt antenna array 124 to facilitate coverage of wireless device 130A*. If a determination was made to adapt antenna array 124, adaption manager 122 may *transmit a confirmation* (e.g., via communication channel 160 or 170) *to indicate acceptance of the handoff request*.” ’888 patent at 6:26-37. The specification also recites that “[a]daption manager 122 may also include logic and/or features to *adapt one or more beams of antenna array 124 to adjust wireless network 120’s coverage area* (e.g., back to coverage area 125-1) based at least on the handoff request.” *Id.* at

6:51-59; *see id.* at 6:60-7:3, 7:4-23; *see also id.* at 2:13-26; Cooklev Decl. ¶ 49.

The specification further explains that adaption manager 122 contains “[a]dapt logic 310,” which “may further include one or more of a *receive feature 312*, a cost feature 314, a *beam feature 316* or a handoff feature 318, or any reasonable combination thereof.” ’888 patent at 9:12-15. The specification also explains that the adaption manager’s “receive feature” receives handoff requests, and its “beam feature” causes the antenna array’s beams to be adapted and transmits a confirmation that the handoff request was accepted, again clearly linking the structure of adaption manager 122 to the claimed functions. *See, e.g., id.* at 12:37-47 (describing logic and *receive feature 312* to allow adaption manager 122 to “*receive a handoff request from wireless network 110*”); *id.* at 12:64-13:18 (describing logic and *beam feature 316* to allow adaption manager 122 to “*adapt one or more beams generated from or by antenna array 124* and to “*transmit a confirmation to indicate acceptance of the handoff request*”); *see also* Cooklev Decl. ¶¶ 49-50.

As noted in the previous section, “adapt logic 310 and control logic 320 may separately or collectively represent a wide variety of logic device(s) to implement the features of adaption manager 122,” such as “one or more of a computer, a microprocessor, a microcontroller, a field programmable gate array (FPGA), an application specific integrated circuit (ASIC), a sequestered thread or a core of a multi-core/multi-threaded microprocessor or a combination thereof.” ’888 patent at 9:6-10, 9:20-28. A POSITA would understand that these logic devices are structural components on which the functionality of the adapt logic and control logic is implemented. Cooklev Decl. ¶ 50.

Defendants’ expert contends that this disclosure is insufficient because “the ‘adaption manager’ programmed to carry out the functions recited in the claims would need to be implemented in a special purpose computer,” but he does not explain why this is the case. *See*

Proctor Decl. ¶ 45. Nor is it. Rather, as explained above, a POSITA would understand that the adaption manager's "adapt logic" and "control logic" could be implemented on off-the-shelf "logic devices," rather than on a special purpose computer. Cooklev Decl. ¶¶ 40-41.

Moreover, Mr. Proctor is likewise incorrect when he alleges that the only structure of adaption manager 122 recited in the specification are the exemplary "logic devices" discussed above. Rather, the specification also describes numerous other structural components of adaption manager 112 in addition to these "logic devices," including memory 330 and I/O interfaces 340. *See, e.g.*, '888 patent at 9:6-9. The specification also states that "adapt logic 310 is coupled to [each of] control logic 320, memory 330 and I/O interfaces 340," making clear that the corresponding structure of the claimed "adaption manager" is more than just one or more of the disclosed "logic devices." A POSITA would understand that it is these I/O interfaces, rather than any of the disclosed "logic devices," that the adaption manager uses to receive its inputs and send/transmit its outputs. Cooklev Decl. ¶ 46; *see G+ Commc'ns, LLC v. Samsung Elecs. Co.*, 2:22-cv-00078-JRG, 2023 WL 4534366, at *12-13 (E.D. Tex. July 13, 2023) ("A processor alone would be incapable of sending data Thus, a skilled artisan would interpret [the corresponding structure] as requiring a transmitter controlled by a processor to send the required message at the appropriate time;" rejecting argument that the term is indefinite for "fail[ure] to disclose any algorithm or circuit design for the function"). A POSITA would thus readily understand that the corresponding structure of adaption manager of claim 20 requires the portions of adapt logic 310 discussed above, control logic 320, memory 330, and I/O interface 340 to perform the claimed functions. Cooklev ¶ 51.

C. “predetermined network load”

Cobblestone’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning; not indefinite under 35 U.S.C. § 112.	Indefinite.

The specification must “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as [the] invention.” 35 U.S.C. § 112 ¶ 2. In *Nautilus, Inc. v. Biosig Instruments, Inc.*, the Supreme Court “h[e]ld that a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” 572 U.S. 898, 901 (2014). Definiteness is measured from the viewpoint of a POSITA at the time the patent was filed. *Id.* at 908. The party challenging the validity of the patent-in-suit bears the burden of proving indefiniteness by clear and convincing evidence. *Id.* at 912 n.10 (citing *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 95 (2011)).

But Defendants do not present any evidence that the *scope* of the claimed invention is uncertain. To the contrary, their own expert’s declaration demonstrates that the *scope* of the claim term is clear. Proctor Decl. ¶ 56. Rather than pointing to a lack of reasonable certainty of scope, Defendants’ expert argues that a POSITA would not have understood how the claimed invention was *possible*. *Id.* To be clear, this argument is false, as demonstrated in the ’888 patent’s specification and the declaration of Dr. Cooklev. But even if the argument were true, while it might conceivably be a matter relevant to some other doctrine of patent law such as enablement or infringement, it would not render the claim term indefinite.

Defendants do not appear to argue that there is anything indefinite about the phrase “network load.” Indeed, claim 23 of the ’888 patent is asserted in this case and contains the term “network load” (’888 patent at 20:25), but Defendants do not contend that the phrase in that claim

is indefinite. As to “predetermined,” Defendants’ expert has no doubts as to what that means in the context of claim 12: “A POSITA would have understood that that term ‘predetermined’ means the determination must be performed before the handover takes place.” Proctor Decl. ¶ 56. On this point, Mr. Proctor is correct. According to claim 12, “adapting” one or more beams is “based [on] a predetermined network load ... due to the handoff.” ’888 patent at 18:63-64. According to parent claim 9, the “adapting” is “based, at least in part, on the handoff request” and is done “to facilitate coverage of the wireless device by the first wireless network.” *Id.* at 18:41-43. This claim language suggests that the “predetermined network load” is something that can be known when the handoff request has been received but before the wireless device is actually covered by the first wireless network, i.e., before the device is actually handed off. *See* Cooklev Decl. ¶ 54 (explaining that “the phrase ‘predetermined network load’ refers to a determination in advance of what the network load from a wireless device being added to the network will be”).

The specification confirms this interpretation, as it describes features to “*predetermine* criteria such as what *network load* would be placed on wireless network 120 *if wireless device 130A was handed off* from wireless network 110.” ’888 patent at 6:63-66; *see* Cooklev Decl. ¶ 55. The specification likewise describes “a *predetermined network load* placed on wireless network 120 *if wireless device 130A is handed off*.” ’888 patent at 12:56-57; *see* Cooklev Decl. ¶ 56. In each case, the specification refers to a predetermined network load as one that is determined before a handoff, consistent with Mr. Proctor’s interpretation of the term.

The definiteness of this term is further confirmed by Defendants’ petition in IPR2024-00137 and Mr. Proctor’s declaration in support. This petition and declaration purport to show that a prior art reference satisfies this claim term, without any suggestion that the term is unclear or that a POSITA would not understand how it could be satisfied. Ex. 5 at 54-56 (“Chitrapu discloses

adapting one or more beams based, at least in part, on a *predetermined network load* placed on the first wireless network due to the handoff of the wireless device.”); *see also* Ex. 6 ¶¶ 190-193. In their submissions to the PTAB, Defendants and their expert had no difficulty understanding the scope of this term.

These submissions to the PTAB also flatly contradict Mr. Proctor’s claim in his declaration to this Court that a POSITA “would not understand how” the claim term could be satisfied. Proctor Decl. ¶ 56. As explained above, whether a POSITA would know that satisfying a claim is possible has no bearing on definiteness, so long as a POSITA would understand the claim scope with reasonable certainty. But if this issue were relevant to indefiniteness, Defendants and their expert have clearly told the PTAB that a POSITA *would* know that satisfying the claim was possible based upon the Chitrapu reference. Moreover, the ’888 patent specification itself provides examples of how the “predetermined network load” limitation can be satisfied in the context of claim 12. Cooklev Decl. ¶¶ 55-56; ’888 patent at 6:60-7:3, 9:45-53, 12:48-64.

IV. U.S. PATENT NO. 10,368,361 (“the ’361 patent”)

A. “quality status module configured to determine a respective status of a first frequency spectrum resource and a second frequency spectrum resource”

Cobblestone’s Proposed Construction	Defendants’ Proposed Construction
<p>No construction necessary; plain and ordinary meaning; not subject to means-plus-function treatment under 35 U.S.C. § 112(f).</p> <p>If counterfactually § 112(f) were to apply:</p> <p>Function: determine a respective quality status of a first frequency spectrum resource and a second frequency spectrum resource, wherein each of the first frequency spectrum resource and the second frequency spectrum resource are associated with an air interface that is available for use by the wireless base station for an uplink channel or a downlink channel</p>	<p>Means-plus-function term governed by § 112(f).</p> <p>Function: determine a respective quality status of a first frequency spectrum resource and a second frequency spectrum resource, wherein each of the first frequency spectrum resource and the second frequency spectrum resource are associated with an air interface that is available for use by the wireless base station for an uplink channel or a downlink channel</p>

Structure: Processor with software running an algorithm to execute measurement of “channel quality indicator (CQI), received interference power (RIP), and/or any other suitable quality metric or key performance indicator, such as RSSI, acknowledgment/negative acknowledgement (ACK/NACK) frequency, dropping rate, block error rate, bit error rate, signal-to-interference-plus-noise ratio (SINR), and equivalents.	Structure: Processor with software running an algorithm to execute measurement of “channel quality indicator (CQI), received interference power (RIP), and/or any other suitable quality metric or key performance indicator, such as RSSI, acknowledgment/negative acknowledgement (ACK/NACK) frequency, dropping rate, block error rate, bit error rate, signal-to-interference-plus noise ratio (SINR), etc.” 4:29-34.
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The phrase “quality status module configured to determine a respective status of a first frequency spectrum resource and a second frequency spectrum resource” appears in claim 10 of the ’361 patent (Ex. 3). This term does not invoke § 112(f). Cooklev Decl. ¶¶ 58-61. Alternatively, if the Court does construe this phrase as subject to § 112(f), it appears that the parties generally agree concerning the function and structure of this limitation. Cooklev Decl. ¶¶ 62-64.

i. AIA 35 USC. § 112(f)⁹ is not applicable to claim 10 of the ’361 patent.

Defendants cannot meet their burden of demonstrating that “quality status module ...” invokes means-plus-function claiming. *See supra* § III.B.i (detailing relevant legal standards).

First, “quality status module ...,” in the full context of claim 10, conveys structure to a POSITA. Claim 10 of the ’361 patent reads, in relevant part, as follows:

10. A wireless base station for a wireless communication network, the wireless base station comprising:

a ***quality status module*** configured to determine a respective quality status of a first frequency spectrum resource and a second frequency spectrum resource, wherein each of the first frequency spectrum resource and the second frequency spectrum resource are associated with an air interface that is available for use by the wireless base station for an uplink channel or a downlink channel;

a ***processor coupled to the quality status module*** and configured to:

⁹ Because the priority date of the ’361 patent post-dates enactment of the America Invents Act, AIA Section 112(f) applies here, rather than pre-AIA Section 112 ¶ 6. This is, however, a distinction without a difference because the text of these statutory sections is identical.

determine, based on the quality status of the first frequency spectrum resource, that the first frequency spectrum resource is a sub-optimal resource, for the uplink channel and the downlink channel, relative to other frequency spectrum resources that are available for use by the wireless base station;

...

a scheduler module coupled to the processor

'361 patent at claim 10. To begin with, the surrounding claim language itself indicates to a POSITA that “quality status module” is structural. For example, the claim requires that the quality status module is “coupled” to a processor. *Id.* (“a processor ***coupled*** to the quality status module”); *see, e.g., Free Stream*, 2017 WL 1165578, at *28; *see also Netlist*, 2023 WL 8101855, at *12; *OnPoint*, 2022 WL 1612070, at *22-23. A POSITA would further understand that such coupling is necessary because that processor uses outputs from the “quality status module” (i.e., quality statuses of frequency spectrum resources) to make certain of the claimed determinations. *See* '361 patent at claim 10; Cooklev Decl. ¶ 60. The fact that the quality status module has ***outputs*** is a further indication that it is structural. *See, e.g., Apple*, 757 F.3d at 1296-304; *Netlist*, 2023 WL 8101855, at *12; *Intelligent Water*, 2017 WL 2444723, at *13-14.

The patent specification further confirms that “quality status module” is structural by further describing ***inputs*** that it receives. For example, Figure 1 depicts node 110, which a POSITA would understand could be a wireless base station such as that mentioned in the preamble of claim 10, and the specification further explains that “node 110 may obtain the quality status of the current uplink and downlink frequency spectrum resources available (e.g., subcarriers 201-206) using quality status module 113.” '361 patent at 8:50-53; Cooklev Decl. ¶ 61. A POSITA would understand that the quality status module 113 makes its determination of quality status using inputs from the processor to which it is coupled, such as “reference signal received power (RSRP),” “received signal strength indicator (RSSI),” and “particle size of a wavelet or smaller particle size,

such as a physical resource block (PRB).” ’888 patent at 8:53-64; Cooklev Decl. ¶ 61.

Notably, Defendants failure to contend that the “scheduler *module* coupled to the processor” is a non-structural term counsels against application of Section 112(f) to “quality status *module*.” See ’361 patent at claim 10. “The simple answer is that all of the ‘[module]’ terms when ‘read in light of the remaining claim language, specification, prosecution history, and relevant extrinsic evidence, ha[ve] sufficiently definite structure to a person of ordinary skill in the art.’” *Free Stream*, 2017 WL 1165578, at *21 (quoting *Apple*, 757 F.3d at 1298) (second alteration in original) (finding that defendant’s failure to allege that the term “pairing server” invoked § 112 ¶ 6 “further confirmed” that other “server” terms did not invoke § 112 ¶ 6). Said another way, a POSITA would understand that each of the “quality status module” and “scheduler module” (and the “processor”) recites a structural component, at least in part because the claim language makes clear that these three components are operatively coupled together. See ’361 patent at claim 10 (“a processor coupled to the quality status module” and “a scheduler module coupled to the processor”); Cooklev Decl. ¶ 60; see also *WSOU Investments LLC v. Google LLC*, No. 2022-1063, 2023 WL 6889033, at *4 (Fed. Cir. Oct. 19, 2023) (reversing the district court’s finding that § 112 ¶ 6 applied to the terms “computer program code,” “memory,” and “processor” because “a person of ordinary skill in the art reading the claim in light of the specification would understand that the recited computer program code is stored in a memory structure and running on the processor”).

In short, Defendants cannot rebut the presumption that § 112(f) does not apply to this term because the claims themselves connote structure to a POSITA.

- ii. **To the extent § 112(f) applies to claim 10, the corresponding structure is a processor with software running an algorithm to measure any of a number of quality metrics or key performance indicators.**

The “corresponding structure” step is straightforward because the specification is explicit that the structure corresponding to the recited function is a processor with a software running an

algorithm to execute measurement of any of a number quality metrics or key performance indicators. Indeed, the parties do not appear to dispute what the corresponding structure of the purported function is if Section 112(f) is deemed to apply. Cooklev Decl. ¶ 62; Proctor Decl. ¶ 80.

In any event, upon reading the specification, a POSITA would readily understand that there is corresponding structure in the specification linked with the claimed function. The specification explains that “processor module 112 may include a quality status module 113 configured to determine a quality status of frequency spectrum resources,” and quality status module 113 may do so “based on channel quality indicator (CQI), received interference power (RIP), and/or any other suitable quality metric or key performance indicator, such as RSSI, acknowledgement/negative acknowledgement (ACK/NACK) frequency, dropping rate, block error rate, bit error rate, signal-to-interference-plus-noise-ratio (SINR), etc.” ’361 patent at 4:18-34; *see also id.* 8:50-9:2; 10:55-11:3; Fig. 4; Cooklev Decl. ¶¶ 63-64; Proctor Decl. ¶¶ 82-83.

B. “shared resource pool”

Cobblestone’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning, which is a pool containing one or more frequency spectrum resources that can be scheduled for uplink <u>or</u> downlink channels.	A pool containing one or more <u>sub-optimal</u> frequency spectrum resources that can be scheduled for uplink <u>and</u> downlink channels.

Defendants’ proposed construction imposes two requirements that are not part of the plain meaning of this term in the context of the specification and prosecution history. Defendants point to no evidence of lexicography or disavowal of scope that would justify imposing these limitations. *See Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (lexicography and disavowal are only two exceptions to rule of ordinary and customary meaning).

The first improper requirement is that the pool contain “sub-optimal” resources. This is an improper limitation to the extent that it suggests that the pool always contains sub-optimal

resources or that the resources within the pool are all sub-optimal at any given point in time. What independent claims 10 and 17 require is that the base station or processor “in response to the determination that the first frequency spectrum resource is the sub-optimal resource, assign the first frequency spectrum resource to a shared resource pool.” In other words, the claims require that at least some resources be assigned to a shared resource pool after it is determined that they are sub-optimal *at that point in time*. To the extent that Defendants’ inclusion of “sub-optimal” in their construction simply requires that some resources are assigned to the pool in response to a determination they are sub-optimal, then this requirement is superfluous to what is already expressly required by the claims.

But to the extent that the proposed construction requires that *all* the resources that are ever in the pool have been assigned there because they were sub-optimal—rather than at least some of them, as the claims require—neither Defendants nor their expert point to anything in the specification or file history that suggests the claims are so limited. At most the specification states that in some embodiments a resource may be assigned to the shared resource pool because it is sub-optimal, but that requires nothing more than what claims 10 and 17 already expressly require.

The further problem with Defendants’ inclusion of “sub-optimal” is that it suggests that resources must continue to be sub-optimal the entire time that they are in the shared resource pool. Neither the claims nor the specification require such a thing. All the claims require is that—at least sometimes—resources be assigned to the shared resource pool based on a determination that they were sub-optimal at that point in time. Whether a resource is sub-optimal may change over time, for example because measured quality or interference may change or because the other spectral resources that are available may change. For this reason, the specification teaches scheduling frequency spectrum resources to uplink or downlink channels “based on the *current suitability* of

each resource.” ’361 patent at 10:25-27. The specification specifically teaches scheduling resources that are currently assigned to the shared resource pool to uplink or downlink channels based upon a determination that they are now *more* suitable than other available frequency spectrum resources. *Id.* at 10:13-23. These teachings of the ’361 patent clearly show that a “shared resource pool” *can* include resources that are not sub-optimal.

The second improper requirement in Defendants’ proposed construction is the requirement that the resources in the pool can be scheduled for uplink *and* downlink channels. Both the claims and the specification state that resources from the shared resource pool are scheduled for uplink *or* downlink channels. For example, claim 17 requires that the processor: “select the first frequency spectrum resource from the shared resource pool, and schedule the first frequency spectrum resource for *either* the uplink channel *or* the downlink channel.” *Id.* at 20:50-53. Permitting scheduling from the shared resource pool for either uplink *or* downlink is consistent with the ordinary meaning in the context of the patent. Cooklev Decl. ¶¶ 66-68. In contrast, requiring that the resources can be scheduled for uplink *and* downlink channels, as Defendants propose, is flatly inconsistent with the claim language requiring that they be scheduled for either uplink *or* downlink.

The portions of the specification that Defendants and their expert cite consistently describe scheduling to uplink *or* downlink (or when describing assignment of multiple resources, “uplink *and/or* downlink”), never to uplink *and* downlink for the same channel. *See, e.g.*, ’361 patent at 1:43-44 (“for an uplink or downlink channel”); *id.* at 9:66-10:1 (“schedule one or more frequency spectrum resources ... for uplink and/or downlink channels”); *id.* at 10:11 (“for an uplink or a downlink channel”); *id.* at 10:15-21 (“for a downlink channel ... for an uplink channel”); *id.* at 11:35 (“for an uplink or a downlink channel”); *id.* at 12:61 (“either an uplink channel or a downlink channel”); *id.* at 17:51-52 (“for either the uplink channel or the downlink channel”).

Cobblestone’s plain meaning construction requiring scheduling for “uplink *or* downlink channels” is consistent with the language of the claims and the repeated language of the specification. Defendants’ requirement of scheduling for “uplink *and* downlink channels” is without any support at all. Both Defendants’ inclusion of the requirement of “sub-optimal” resources and their use of “and” between uplink and downlink improperly narrow the meaning of this term, and both should be rejected.

C. “sub-optimal resource”

Cobblestone’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning; not indefinite under 35 U.S.C. § 112.	Indefinite.

As explained above, to establish that this term is indefinite, Defendants must demonstrate by clear and convincing evidence that it fails to “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus*, 572 U.S. at 910. Defendants cannot do so here.

Here, the claim context and written description provide ample guidance as to what the term “sub-optimal resource” means. In context, claim 10 recites:

a quality status module configured to determine a respective *quality status* of a first frequency spectrum resource and a second frequency spectrum resource ...

a processor coupled to the quality status module and configured to:

determine, *based on the quality status* of the first frequency spectrum resource, that the first frequency spectrum resource is a ***sub-optimal resource***, *for the uplink channel and the downlink channel, relative to other frequency spectrum resources that are available for use by the wireless base station*; and

in response to the determination that the first frequency spectrum resource is the sub-optimal resource, assign the first frequency spectrum resource to a shared resource pool ...

’361 patent at claim 10. The other asserted independent claims have analogous limitations. The “sub-optimal resource” determination is not made in a vacuum. First, it must be based on at least one specific input: the quality status determined by the quality status module. Second, it must relate

to both uplink and downlink channels. Third, it must be relative to other frequency spectrum resources. Fourth, the subsequent assignment of the first spectrum resource to a shared resource pool must be in response to the determination. This claim context itself thus provides tight constraints on the meaning and scope of “sub-optimal resource.”

Reading the specification with these constraints in mind confirms the definite scope of “sub-optimal resource” in the context of the patent. For example, the patent explains that the processor “may assign the first frequency spectrum resource to shared resource pool 118, based on the quality status of the first frequency spectrum resource determined in block 401,” and in one embodiment may do so “when it is determined that the first frequency spectrum resource is *less suitable for an uplink channel* than one or more other frequency spectrum resources available to node 110 and also is *less suitable for a downlink channel* than one or more frequency spectrum resource that are available to node 110.” *Id.* at 11:4-17. This example, with the same context and constraints as the claim (based on quality status, determined relative to other resources, related to both uplink and downlink, and relevant to shared pool assignment), confirms to a POSITA that the specification’s phrase “less suitable” corresponds to the claim term “sub-optimal.”

The patent elaborates one non-limiting example of a full analysis, in which the first frequency spectrum resource is determined to be sub-optimal (“less suitable”) for a downlink channel relative to other resources because its CQI value, a quality value, is less than one or more of the other resources’ CQI; and sub-optimal for an uplink channel relative to other resources because its RIP, another quality value, is greater than one or more of the others’ RIP. *Id.* at 11:18-28; *see also id.* at 8:53-9:2 (describing ways of obtaining such values). In this context, a POSITA would understand that a higher CQI is better than a lower CQI, and that a lower RIP is better than a lower RIP. Cooklev Decl. ¶¶ 72-73. As Dr. Cooklev confirms, a POSITA reviewing this passage

would understand that “sub-optimal” refers to an “objective determination” based on measured quantities. *Id.*

This example also confirms that “sub-optimal” and “less suitable” do not mean *worst* or *least suitable*, because each requirement states that the first channel’s “quality status” must be worse than the “quality status” of at least one of the other resources. If resource A is “worse” than B but “better” than C, it is still sub-optimal relative to other resources, because it is “worse” than at least one of B and C. Likewise, this passage confirms the ordinary meaning of the contextual phrase “relative to other frequency spectrum resources” as meaning relative to *one or more* other resources. In light of the specification’s “one or more other frequency spectrum resources” language (*id.* at 11:13-17, 11:21-22, 11:25-27) it is unambiguous that the claim does not require evaluation of *all* other frequency spectrum resources, or any specific number of resources. Finally, the patent does not require any special degree of difference between the “sub-optimal” resource and the “other” resources, such as a difference threshold, which is not logically required and is not recited anywhere in the claims or specification. In short, the specification confirms the plain and ordinary meaning of “sub-optimal.”

Defendants’ expert Mr. Proctor appears to assume that a discussion of “thresholds” in the specification, which relates to determinations that a second frequency spectrum resource may be “usable” for an uplink or downlink channel, applies to the “sub-optimal resource” limitations. Proctor Decl. ¶ 96 (quoting ’361 patent at 11:58-12:7). This passage provides additional examples of determination methods that may or may not fall within the scope of the “sub-optimal” determination as claimed. The threshold operations are taught in the context of a different step of assigning a second frequency spectrum resource to an uplink or downlink pool based on quality status, corresponding to limitations in dependent claims 4 and 11. Those limitations do not include

the “sub-optimal” determination or its contextual relationships; in particular, there is no requirement of a determination “relative to other frequency spectrum resources,” and the “threshold” discussion likewise does not mention those important aspects of the “sub-optimal” limitation. A POSITA reading the “threshold” discussion would understand that comparing the first frequency spectrum resource’s quality status to a threshold might be made as part of the claimed sub-optimal determination “relative to other frequency spectrum resources,” for example if the threshold is representative of other frequency spectrum resources. But nothing in the passage suggests that the use of a “threshold” would, *ipso facto*, meet the claim limitations and thus undermine the contextual and specification-guided boundaries of the “sub-optimal” limitation as discussed above. In particular, using a threshold cannot eliminate the claim requirement to determine whether a resource is “sub-optimal ... relative to other frequency spectrum resources,” or otherwise expand the claim scope beyond its definite bounds.

Mr. Proctor also states without explanation that “sub-optimal” is a “term of degree.” Proctor Decl. ¶ 92. The Federal Circuit has explained that “[b]ecause language is limited, we have rejected the proposition that claims involving terms of degree are inherently indefinite.” *Sonix Tech. Co. v. Publications Int’l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017). “Thus, a patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement.” *Id.* (internal quotation marks omitted). “Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). In determining whether the patent has provided sufficient guidance for a term of degree, a reviewing court should “look to the written description for guidance.” *Id.* at 1371.

Mr. Proctor opines at several points that the specification gives no boundary between

“which resource is optimal versus which resource is suboptimal.” Proctor Decl. ¶ 95; *see also id.* ¶ 98. The references to “optimal” belie a fundamental misunderstanding of the claim context: Mr. Proctor is ignoring the “relative to ...” context. There is no such thing as an “optimal” resource within the ’361 patent’s framework, and as explained above, the patent never requires a determination of sub-optimality in the abstract. This error renders Mr. Proctor’s conclusions incorrect and unreliable, in particular his opinion that this is a term of degree.

But even if this were a term of degree, courts have upheld similar terms in similar circumstances. *See, e.g., InfoGation Corp. v. ZTE Corp.*, No. 16-CV-01901-H-JLB, 2017 WL 1821402, at *12 (S.D. Cal. May 5, 2017) (finding “optimal route” not indefinite due to specification explaining that it is calculated “based on certain objective criteria such as travelling conditions or user preferences,” thus providing an “objective baseline through which to interpret the claims.”); *Carrier Corp. v. Goodman Global, Inc.*, 64 F. Supp. 3d 602, 614 (D. Del. 2014) (finding “optimal control strategy” not indefinite, on the basis of expert testimony and specification support explaining how to choose an optimal strategy); *Williamson v. Google Inc.*, No. 15-CV-00966-BLF, 2017 WL 3232582, at *9-10 (N.D. Cal. July 27, 2017) (finding “best suited” not indefinite, due to criteria provided in specification and disclosure of a specific purpose for the “best suited” determination, even without any claim limitation directed to “a particular factor or numerical limit”).

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that the counsel of record who are deemed to have consented to electronic service are being served on March 19, 2024, with a copy of this document via the Court's ECF system.

/s/ Reza Mirzaie
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